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EXAMINER

ODLAND, DAVID E

ART UNIT

PAPER NUMBER

2662

DATE MAILED: 01/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/405,787

Applicant(s)

KAO ET AL.

Examiner

David Odland

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. Claims 7,8,18,19,27 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 7, 18 and 27 recite "...an intermediate switching media type..." It is unclear what is meant by an 'intermediate switching media type'.

Claims 8,19 and 28 are rejected because they depend on claims 7, 18 and 28 respectively.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

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4. Claims 1, 2, 6, 7, 8, 12, 13, 17, 18 and 19, as best understood, rejected under 35 U.S.C. 102(e) as being anticipated by Akhtar et al. (USPN 6,172,973), hereafter referred to as Akhtar.

Referring to claims 1 and 12, Akhtar discloses a carrier class switch apparatus (a switching apparatus (see figure 3 and claim 1)) comprising:

means for receiving a voice call having a first media type being one of TDM voice/ fax, VoIP, VoATM and VoFR, and a first signaling type corresponding to said first media type (means for receiving voice calls in a TDM format which inherently has an associated signaling (see figure 3, claim 1 and abstract));

means for converting said voice call to a second media type being another of TDM voice/fax, VoIP, VoATM and VoFR (the TDM signals are converted into ATM cells (see figure 3, claim 1 and abstract));

means for relaying signaling associated with said voice call of said first signaling type to a second signaling type corresponding to said second media type (signaling information of the TDM connections relayed through the ATM connections (see figure 3, claim 1 and abstract));
and

means for forwarding said voice call having said second media type (an ATM switch is used to transport the voice call (see figure 3, claim 1 and abstract)).

Referring to claims 2 and 13, Akhtar discloses the switching system as discussed above. Furthermore, Akhtar discloses that the means for receiving said voice call includes means for receiving said voice call at a first interface of the switch apparatus (the voice call is received at

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the TDM switch (see figure 3, claim 1 and abstract)), said first interface being one of a broadband interface and a narrowband interface (the TDM switch is a narrowband apparatus since it receives voice data (see figure 3, claim 1 and abstract)), and wherein said means for forwarding said voice call includes means for forwarding said voice call at a second interface of said switch apparatus (the ATM switch forwards the voice call ((see figure 3, claim 1 and abstract))), said second interface being one of said broadband interface and said narrowband interface (the ATM switch is a broadband interface. Note, it is well known in the art that ATM technology transports data at rates of T3 and above and so it is therefore considered a broadband interface (see figure 3, claim 1 and abstract)).

Referring to claims 6 and 17, Akhtar discloses the switching system as discussed above. Furthermore, Akhtar discloses that the system comprises means for switching packets associated with said voice call between said first interface and said second interface (the packets are switched from the TDM switch to the ATM switch (see figure 3)).

Referring to claims 7 and 18, Akhtar discloses the switching system as discussed above. Furthermore, Akhtar discloses that the system comprises means for converting the voice call into packets having an intermediate switching media type (the voice call is converted into ATM cells which transport through an intermediate ATM network and are converted back to TDM at the destination (see figure 3, claim 1 and abstract)).

Referring to claims 8 and 19, Akhtar discloses the switching system as discussed above. Furthermore, Akhtar discloses that the intermediate switching media type is ATM cells (the voice call is converted into ATM cells for transmission through the ATM network (see figure 3, claim 1 and abstract)).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akhtar in view of Chu et al. (USPN 5,956,334), hereafter referred to as Chu.

Referring to claims 3 and 14, Akhtar discloses the switching system as discussed above. Akhtar does not disclose that the switching system comprises quality of service means. However, Chu discloses of means for associating a voice call with a quality of service requirement (voice calls transmitted over ATM connections whose characteristics are dictated by QOS requirements (see column 2 lines 21-34)). It would have been obvious to one skilled in the art at the time of the invention to include means associated with the quality of service of the voice call, as taught by Chu, in the system disclosed by Akhtar because since voice data is time sensitive data, the quality of service requirements would allow the voice data to be transported through the system while maintaining the proper bit rate, thereby assuring the voice call is suitably heard by the receiving end user. Therefore, the reliability of the system will be increased.

7. Claims 9, 11, 20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akhtar in view of Lee (USPN 6,252,847), hereafter referred to as Lee.

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Referring to claims 9, 11, 20 and 22, Akhtar discloses the switching system as discussed above. Akhtar does not disclose that the switching system has an associated quality of service or that the data is switched based on a rate corresponding to that quality of service. However, Lee discloses an ATM cell transmission system comprising means for associating said voice call with a quality of service requirement (real-time data, such as voice calls, has an associated quality-of-service requirement (see column 1 lines 13-30)) and said means for switching packets associated with said voice call being adapted to switch said packets at a rate corresponding to said quality of service requirement (the quality of service level is specified to according to the instantaneous bandwidth required for available bit rate (ABR) traffic (see column 1 lines 25-28, column 1 lines 55-58 and column 2 lines 44-50)). It would have been obvious to one skilled in the art at the time of the invention to determine the quality of service according to an associated rate, as taught by Lee, and switch the voice call according to that quality of service in the system of Akhtar, because doing so would allow the system to assure that there is enough bandwidth available to properly transport the voice call, thereby making the system more reliable.

8. Claims 5 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akhtar in view of Chu as applied to claims 3 and 14 above and further in view of Lee.

Referring to claims 5 and 16, Akhtar discloses the switching system as discussed above. Akhtar does not disclose that the switching system determines quality of service requirements in accordance with instantaneous availability of bandwidth. However, Lee discloses an ATM cell transmission system comprising means for determining said quality of service requirements in accordance with instantaneous availability of bandwidth resources (a quality of service level is

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specified to according to the instantaneous bandwidth required for available bit rate (ABR) traffic (see column 1 lines 25-28, column 1 lines 55-58 and column 2 lines 44-50)). It would have been obvious to one skilled in the art at the time of the invention to determine the quality of service according to available bandwidth, as taught by Lee, in the system of Akhtar, because doing so would allow the system to assure that there is enough bandwidth available to properly transport the voice call, thereby making the system more reliable.

9. Claims 4 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akhtar in view of Chu as applied to claims 3 and 14 above, and further in view of Martin (USPN 6,154,776), hereafter referred to as Martin.

Referring to claims 4 and 15, Akhtar discloses the switching system as discussed above. Akhtar does not disclose that the switching system determines quality of service requirements in accordance with the service profile of the voice call. However, Martin discloses a system comprising means for determining quality of service requirements in accordance with a service plan profile of a party (quality of service requirements are determined from a user profile associated with a particular flow (see column 9 lines 65-67 and column 10 lines 1-17)). It would have been obvious to one skilled in the art at the time of the invention to associate a users service plan in determining QOS requirements, as taught by Martin, in the system disclosed by Akhtar because doing so will allow various QOS requirements to be determined based on various users of the system, thereby making the system of Akhtar more flexible.

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10. Claims 10 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akhtar in view of Lee as applied to claims 9 and 20 above, and further in view of Martin.

Referring to claims 10 and 21, Akhtar discloses the switching system as discussed above. Akhtar does not disclose that the switching system determines quality of service requirements in accordance with the service profile of the voice call. However, Martin discloses a system comprising means for determining quality of service requirements in accordance with a service plan profile of a party (quality of service requirements are determined from a user profile associated with a particular flow (see column 9 lines 65-67 and column 10 lines 1-17)). It would have been obvious to one skilled in the art at the time of the invention to associate a users service plan in determining QOS requirements, as taught by Martin, in the system disclosed by Akhtar because doing so will allow various QOS requirements to be determined based on various users of the system, thereby making the system of Akhtar more flexible.

11. Claims 23 and 25-29, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartholomew et al. (USPN 5,712,903), hereafter referred to as Bartholomew.

Referring to claim 23, Bartholomew discloses a carrier class switch apparatus integrated in a single switching platform (a split switch intelligent peripheral (IP) (see figure 8)) comprising:

a switching fabric adapted to switch packets between a plurality of broadband switching ports (the switch switches data between a plurality of switching ports (see item 800 of figure 8));

a broadband interface coupled to one of said plurality of broadband switching ports, said broadband interface being adapted to communicate a voice call between said switching fabric

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and a broadband connection (an interface module (see item 810 of figure 8) is coupled to the broadband switch fabric and transports voice calls from the switching fabric to the broadband ATM connections (see items 800 and 810 of figure 8)), said voice call communicated by said broadband interface with said broadband connection having a first media type being one of TDM voice/fax, VoIP, VoATM and VoFR (ATM broadband connections transport voice calls (see figure 8)), and a first signaling type corresponding to said first media type (inherently the ATM connections carrying the ATM cells have a type of signaling associated with them (see figure 8));

a local switch module coupled to another one of said plurality of broadband switching ports and to one or more narrowband interfaces The telephone narrowband switch fabric is coupled to the broadband connections and interface to the narrowband telephone line connections (see figure 8)), at least one of said narrowband interfaces being adapted to communicate a voice call between said switching fabric and a narrowband connection (the narrowband telephone interfaces are adapted to transport voice calls from the telephones and the broadband ATM switch (see figure 8)), said voice call communicated by said at least one narrowband interface with said narrowband connection having a second media type being another of TDM voice/fax, VoIP, VoATM and VoFR (the narrowband telephone call is a voice call (see figure 8)), and a second signaling type corresponding to said second media type (inherently the voice calls have a particular type of signaling associated with them (see figure 8)); and

a switch control card coupled to said broadband interface and said narrowband interfaces (a CPU is coupled to the broadband and narrowband interfaces (see item 706 of figure 7)), said

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switch control card being adapted to communicate with a call server for relaying signaling associated with said voice call of said first signaling type to a second signaling type corresponding to said second media type (the CPU is coupled to an Server Control Point (SCP) which is part of an SS7 network used to setup voice calls and can relay signaling information related to the voice call with signaling associated with the ATM connections (see figure 7 and figure 1)).

Bartholomew does not particularly disclose that the voice calls made over the telephone lines are time division multiplexed (TDM). However, it is well known and conventional in the art to transport a plurality of voice connection as one TDM connection, such as a T1 connection. Therefore, it would have been obvious to one skilled in the art at the time of the invention to transport the plural narrowband connections disclosed in Bartholomew as one TDM connection because doing so is well known and conventional.

Referring to claim 25, Bartholomew discloses the switching system as discussed above. Furthermore, Bartholomew discloses that the system includes a voice/ fax controller that converts packets associated with said voice call between said second media type and said first media type (a protocol conversion unit that converts the narrowband data into the broadband data see (figure 7 and figure 8)).

Although, the controller for converting between the narrowband and broadband data disclosed in Bartholomew is coupled to the narrowband interface means, Bartholomew does not disclose that the controller is included within the narrowband interface means. However, it would have been obvious to one skilled in the art at the time of the invention to have including the controller that

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performs the conversion, as disclosed in Bartholomew, within the narrowband interface means, also disclosed in Bartholomew, because doing so is merely a matter of design choice.

Referring to claim 26, Bartholomew discloses the switching system as discussed above. Furthermore, Bartholomew discloses that the system includes converting between the narrowband voice data, which is carried in a T1 and therefore digitized (see figure 2 item 57), and the broadband ATM connections from the ATM broadband switching fabric (see figure 8). Note, the voice calls are inherently re-packetized when they are converted between narrowband and broadband. Bartholomew does not disclose that these processes are performed through the use of DSP's. However, it is well known in the art that DSP's are widely used well-established specialized processors, designed to perform speedy and complex operations on digital data. Therefore, it would have been obvious to one skilled in the art at the time of the invention to implement the conversion and re-packetization operations disclosed in Bartholomew in DSP's because performing such speedy and complex operations in DSP's is widely-used and well-established.

Referring to claims 27, 28 and 29, Bartholomew discloses the switching system as discussed above. Furthermore, Bartholomew discloses a multi-service engine that converts said packets between said second media type and an intermediate switching media type of said switching fabric, wherein the said intermediate switching media type is ATM cells (a protocol converter used to convert narrowband telephone calls into ATM cells (see figure 7 and 8)).

12. Claims 24 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartholomew in view of Chu.

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Referring to claim 24, Bartholomew discloses the switching system discussed above. Bartholomew does not disclose that the switch control card is adapted to route and manage virtual connections between the broadband ports. However, Chu discloses of an ATM system wherein the system is adapted to route and manage virtual circuit connections between a plurality of ports associated with a voice call in accordance with a quality of service requirement for the voice call (virtual connections are established to transport voice calls through the ATM network and the characteristics of the connections are dictated by quality of service requirements (see column 2 lines 21-50)). It would have been obvious to one skilled in the art at the time of the invention to adapt the CPU, associated with the broadband switch fabric disclosed in Bartholomew, to route and manage the virtual connections based on quality of service requirements, as taught in Chu, because since voice data is time sensitive data, the quality of service requirements would allow the voice data to be transported through the system while maintaining the proper bit rate, thereby assuring the voice call is suitably heard by the receiving end-user. Therefore, the system will be more reliable.

Referring to claim 30, Bartholomew discloses the switching system as discussed above. Furthermore, Bartholomew discloses that the system further includes:

a voice/fax controller that converts packets associated with said voice call between said second media type and said first media type (a protocol converter for converting between the telephone narrowband call and ATM cells (see figures 7 and 8)); and

a multi-service engine that converts said packets between said second media type and an intermediate switching media type of said switching fabric (the protocol converter converts between the ATM cells and the narrowband telephone calls (see figure 7 and 8)).

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Although, in the system disclosed in Bartholomew the controller and multi-service engine are coupled to the narrowband interface means (the protocol converter is coupled to the narrowband interface means), Bartholomew does not disclose that the controller is included within the narrowband interface means. However, it would have been obvious to one skilled in the art at the time of the invention to have including the controller and multi-service engine that performs the conversions, as disclosed in Bartholomew, within the narrowband interface means, also disclosed in Bartholomew, because doing so is merely a matter of design choice.

13. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bartholomew in view of Chu as applied to claim 30 above and further in view of Rathnavelu (USPN 5,914,934), hereafter referred to as Rathnavelu.

Referring to claim 31, Bartholomew discloses the switching system discussed above. Bartholomew does not disclose that the narrowband interface further comprises virtual circuit queues and an SAR engine for servicing the queues based on QOS requirements. However, Rathnavelu discloses an ATM system comprising a virtual circuit queue for buffering said packets (a virtual circuit queue for buffering ATM cells (see column 3 lines 45-63)); and

an SAR engine for servicing said virtual circuit queue in accordance with said quality of service requirement (an SAR implemented to perform cell scheduling based on virtual circuit identifiers (VCID's) which have quality of service requirements (see column 3 lines 45-67 and column 2 lines 1-10)).

It would have been obvious to one skilled in the art at the time of the invention to use the virtual circuit queue in conjunction with an SAR, as taught by Rathnavelu in the system

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disclosed in Bartholomew, because since voice data is time sensitive data, the quality of service requirements and the buffer servicing by the SAR would allow the voice data to be transported through the system while maintaining the proper bit rate, thereby assuring the voice call is suitably heard by the receiving end user. Thus, the systems reliability is increased.

Conclusion

14. The following prior art, which is made of record and not relied upon, is considered pertinent to applicant's disclosure:

- a. U.S. Patent Number 5550820 to Baran.
- b. U.S. Patent Number 6459708 to Cox et al.
- c. U.S. Patent Number 5940370 to Curtis et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Odland, who can be reached at (703) 305-3231 on Monday – Friday during the hours of 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou, can be reached at (703) 305-4744. The fax number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist, who can be reached at (703) 305-4750.

deo

December 16, 2002


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